PIVOTAL HANDLE FOR TOWABLE BAGGAGE

This application is a continuation-in-part of the copending U.S. Patent Application of Serial No. 09/705,171, filed November 2, 2000, entitled "Pivotal Handle for Towable Baggage, and copending U.S. Patent Application of Serial No. 09/990,076, filed November 21, 2001, entitled "Pivotal Handle for Towable Baggage".

Background of the Invention

(1) Field of the Invention

This invention pertains to the field of hand towable travel baggage. More particularly, this invention pertains to a towing member having a towing handle that is pivotally attached to an arm portion of the towing member. The pivotal connection between the towing handle and the arm portion of the towing member allows a person to hold the towing handle in a position that is more comfortable than would otherwise be possible when towing

a piece of baggage along a surface. Furthermore, the pivotal connection increases the maneuverability of hand towable baggage by allowing a person to steer a piece of baggage along a tight radius without having to adjust his or her grip on the towing handle.

(2) Description of the Related Art

It is common for many varieties of baggage to be equipped with one or more wheels that enable the baggage to be towed by persons when traveling. Typically, a towable piece of baggage is also provided with a towing member having an arm portion that connects a towing handle to the piece of baggage. The length of the arm portion connecting the towing handle to the piece of baggage prevents the baggage from coming into contact with the person's legs and feet as the piece of baggage is being towed.

Baggage that are not permanently equipped with either wheels or towing members can also be towed using portable towing carts. A typical cart can be removably secured to a piece of baggage to provide wheels and a towing member for towing the piece of baggage.

Regardless of whether a towing member is an integral part of a piece of baggage or whether it is part of a towing cart, the majority of towing members allow a towing handle to be selectively extended from and retracted toward a piece of baggage being towed. The ability to extend and retract the towing member allows the towing member to be unobtrusive when the piece of baggage is not being towed. Furthermore, with the towing member in the retracted position, the piece of baggage can more easily be placed into the trunk of an automobile or into an overhead compartment of an airplane when traveling.

In those cases where the wheels and the towing member of towable baggage are permanently secured to the baggage, it is common for a wheeled piece of baggage to have an extendable towing member comprised of a pair of parallel telescoping poles, bridged by a towing handle, that slide into separate vertically oriented tubular receptacles rigidly attached to an interior compartment of the piece of the baggage. It is also known to utilize a single-pole telescoping tow member that extends and retracts from a single tubular receptacle centrally positioned between the wheels of a piece of baggage. In either situation, a piece of baggage having a permanently secured towing member typically has a receptacle for the towing handle such that the towing handle lies flush with an exterior surface of the piece of baggage when the towing member is retracted. This prevents the towing handle from being obtrusive and reduces the chance of snagging the towing handle on other items, while also improving the aesthetic appearance of the piece of baggage when the piece of baggage is not being towed.

Perhaps more common of towing carts, other types of baggage utilize non-telescoping extendable towing members such as bars or poles that are hinged to swing relative to the piece of baggage. Typically, such hinged towing members have some form of clasp that holds the towing member against a side of the piece of baggage when the baggage is not being towed and that releases the towing member when desired to allow the towing member to pivot upwardly into an extended position.

Regardless of the type of towing member, extendable towing members are usually provided with a mechanism for locking the towing member in the extended position. Such locking mechanisms are well known in the art and include

such devices as spring-loaded detents, cam locks, and other interference locks. Some locking mechanisms are unlocked by manually operating a release mechanism. Other locking mechanisms, such as many spring-loaded detent mechanisms, are automatically released by simply exerting a force on the towing handle that is sufficient to retract the detent. Additionally, some towing members have locking mechanisms that are capable of locking the towing member in the retracted position.

Despite the convenience of being able to tow a piece of baggage as opposed to carrying it when traveling, towing a piece of baggage can be awkward and uncomfortable. One reason that towing a piece of baggage can be uncomfortable lies in the positioning and the shape of the towing handle of most towing members. As mentioned above, it is common for the towing handle of dual-pole towing members to be a bridge spanning between the poles. Such towing handles are therefore generally oriented horizontal to the surface upon which the piece of baggage is being towed and extend perpendicular to the path along which the piece of baggage is being towed. In this configuration, a person must generally grasp the towing handle behind his of her back with his or her wrist rotated to almost its limit of rotation in either direction. When towing such baggage long distances, this position can become uncomfortable and such persons often find it necessary to switch hands one or more times to prevent fatigue.

Regardless of the disadvantages in comfort associated with the towing handle configuration as described above, alternative orientations of the towing handles are often not available without compromising other aspects of the utility of such devices. For

example, shaping the handle of an extendable towing member in a manner that would be more comfortable is likely to cause the handle to protrude from the piece of baggage or require a larger receptacle for the handle when the towing member is retracted. Another disadvantage associated with the towing handle configuration described above is that, due to the awkward grasp needed to hold onto the towing handle, the maneuverability of a towed piece of baggage becomes limited by the person's inability to further twist his or her wrist.

Summary of the Invention

The towing member of the present invention is configured for use in combination with a piece of towable baggage. In accordance with the present invention, a towing member is provided with a towing handle that is pivotally connected to an arm portion of the towing member about at least one axis.

The relative movement between the towing handle and the arm portion of the towing member allows a person to grasp the towing handle in a comfortable position when towing a piece of baggage. Additionally, the relative movement between the towing handle and the arm portion of the towing member increases the maneuverability of a towed piece of baggage by eliminating the need for a person to adjust his or her grip on the towing handle when attempting to redirect the piece of baggage. Furthermore, the relative movement between the towing handle and the arm portion allows the towing handle to be repositioned when the arm portion is retracted such that it is unobtrusive and does not otherwise interfere with the use of the piece of baggage.

In general, the towing member of the present invention comprises an arm portion and a towing handle. The arm portion is configured to connect the towing handle to a piece of baggage and the towing handle is connected to the arm portion in a manner such that the towing handle can pivot relative to the arm portion.

In a first embodiment of the invention, the arm portion utilizes a curved, single-pole telescoping member that enables the towing handle to be selectively extended from and retracted toward a piece of baggage. The towing handle of the first embodiment is T-shaped and a pivot mechanism allows the handle to pivot about a center-axis of the arm portion that is defined by the length of the arm portion.

By enabling the towing handle to pivot about the center-axis of arm portion, the towing handle of the first embodiment can be pivoted such that its crossbar or hand grip portion extends up and back relative to a person using the towing member to tow a piece of baggage. Thus, unlike towing members having handles oriented horizontally and sided-to-side, the towing handle of the first embodiment can be grasped by a person with their hand by their side and with their palm facing their waist. Thus, the towing handle of the first embodiment can be grasped in a natural and comfortable manner similar to how one carries a briefcase. The slope up and back of the hand grip provides additional comfort by allowing a person to position his or her wrist in the middle of its range of motion. Additionally, the pivoting relative motion between the towing handle and the arm portion reduces the need for a person to twist his or her wrist when maneuvering the piece of baggage.

The towing member of the first embodiment is adapted to be permanently secured to a piece of baggage and preferably comprises a receptacle for recessing the towing handle therein when it is desirable to retract the towing handle. When so doing, the towing handle can be pivoted such that the hand grip is oriented horizontally and side-to-side, which is generally preferable for recessing towing handles due to preferred placement of towing members immediately adjacent an exterior surface of the baggage.

In a second embodiment of the invention, the arm portion has a length with opposite proximal and distal ends and the proximal end of the arm portion is operatively secured to a piece of baggage. The towing handle of the second embodiment is operatively connected to the distal end of the arm portion for pivoting movement of the towing handle about at least two pivot axes relative to the arm portion. Because the towing handle of the second embodiment of the towing member is able to pivot about at least two pivot axes relative to the arm portion, the second embodiment of the towing member provides all of the benefits as discussed above in reference to the first embodiment, but is also an improvement thereon.

In a third embodiment of the invention, a towing member comprising, a towing handle, an arm portion operatively connected to the towing handle, a pivot mechanism, and a locking mechanism. The arm portion is configured and adapted to secure the towing handle to a piece of baggage. The pivot mechanism connects the towing handle to the arm portion in a manner that allows the towing handle to be pivoted about a pivot axis relative to part of the arm portion that is spaced from

and external of the piece of baggage when the towing handle is secured to the piece of baggage via the arm portion. The locking mechanism is operatively connected to the towing handle and the arm portion and is also selectively moveable between a locked position and an unlocked position relative to the arm portion. The locking mechanism limits the pivoting of the towing handle about the pivot axis relative to the part of the arm portion when it is in the locked position but does not limit the pivoting of the towing handle about the pivot axis when it is in the unlocked position.

While the principle advantages and features of the present invention have been described above, a more complete and thorough understanding and appreciation for the invention may be attained by referring to the drawings and the detailed description of the preferred embodiments, which follow.

Brief Description off the Drawings

Figure 1 is an isometric view of the towing member of the first embodiment secured to a wheeled backpack with the arm portion in an extended position and with the towing handle rotated relative to the arm portion such that the hand grip of the towing handle lies in a generally vertical plane that includes the center-axis of the arm portion.

Figure 2 is an isometric view of the towing member of the first embodiment secured to a wheeled backpack with the arm portion in a retracted position and with the towing handle rotated relative to the arm portion such that the hand grip of the towing handle is horizontally oriented.

Figure 3 is an top view of the towing handle of the towing member of the first embodiment.

Figure 4 is an elevation view of the towing handle and pivot mechanism of the towing member of the first embodiment.

Figure 5 is a bottom view of the towing handle and pivot mechanism of the towing member of the first embodiment.

Figure 6 is a cross-sectional, partial view of the towing member of the first embodiment showing the assembly of the towing handle to the arm portion.

Figure 7 is a top view of the towing member of the second embodiment.

Figure 8 is a partial elevation view of the towing member of the second embodiment showing the towing handle and the distal end of the arm portion in a first orientation of the towing handle relative to the arm portion.

Figure 9 is a cross-sectional view of the towing member of the second embodiment taken about the line 9-9 of Figure 7.

Figure 10 is a partial side view of the towing member of the second embodiment showing the towing handle and the distal end of the arm portion in the first orientation of the towing handle relative to the arm portion.

Figure 11 is a partial side view of the towing member of the second embodiment showing the towing handle and the distal end of the arm portion with the towing handle in a second orientation relative to the arm portion.

Figure 12 is an exploded assembly view of the towing handle and connector of the third embodiment of the towing member.

Figure 13 is an isometric view of the towing handle and connector of the third embodiment shown with the handle locked in its first position relative to the connector.

Figure 14 is an isometric view of the towing handle and connector of the third embodiment shown with the handle unlocked in its first position relative to the connector.

Figure 15 is an isometric view of the towing handle and connector of the third embodiment shown with the handle unlocked and between its first and second lockable positions relative to the connector.

Figure 16 is an isometric view of the towing handle and connector of the third embodiment shown with the handle locked in its second position relative to the connector.

Reference characters in the written specification indicate corresponding parts throughout the several views of the drawings.

Detailed Description of the Preferred Embodiments

The first embodiment of the towing member of the invention is specifically adapted and configured to be an integral part of a piece of baggage. As shown in Figures 1 and 2, the towing member 20 of the first embodiment is attached to a wheeled backpack 22 and is comprised of an arm portion 24, a towing handle 26, and a pivot mechanism 28. Although shown attached to a wheeled backpack, the towing member is not limited to this use and can be used

with other types of wheeled baggage as well as with wheeled carts for baggage.

As shown in Figure 1, the arm portion 24 of the first embodiment is a curved, retractable single-pole telescoping member formed by a plurality of slidably engaged tubular sections 30, 32, 34. The tubular sections 30, 32, 34 each have an elliptical or oval cross-section and are configured to slide one inside the other in a telescoping manner. To reduce wear and provide sufficient strength, the tubular sections 30, 32, 34 are preferably made of steel, aluminum, or other suitable materials. The tubular section 34 having the largest cross-section is fixed to inside of the backpack 22 and the remaining tubular sections 30, 32 telescope therefrom along an arcuate path that defines a center-axis A-A along the length of the arm portion 24. A locking mechanism (not shown) is preferably configured to automatically lock the arm portion 24 in the extended position once the arm portion is fully extended. Such locking mechanisms are well known in the art and the specific type of locking mechanism is not relevant to the operation of the towing member. Opposite the tubular section 34 that is fixed to the backpack 22, the distal tubular section 30 having the smallest cross-section has an end 38 that remains free to support the towing handle 26. A pair of holes 39 are provided adjacent the free end 38 to secure the towing handle 26 to the arm portion 24 as described below.

The towing handle 26 is preferably T-shaped and is preferably formed of a polymeric material. The T-shape of the towing handle 26 is formed by a stem 40 that preferably extends perpendicularly from a crossbar or hand grip 42 along a center axis B-B of the stem. The

stem 40 of the towing handle 26 terminates at a flat, circular bearing surface 44 that is perpendicular to the center axis. A cylindrical through-hole 46 extends along the center axis through the stem 40 and hand grip 42. A counter-bore 52 is preferably formed into the towing handle 26 at the top of the through-hole 46. The bearing surface 44, the through-hole 46, and the counter-bore 52 of the towing handle 26 form portions of the pivot mechanism 28 as described below. Finally, a recessed cavity 48 and a pair of blind holes 50 are preferably formed in the top of the towing handle 26 to receive a release mechanism (not shown) for unlocking a locking mechanism used with the arm portion 24. Although the first embodiment of the towing handle is T-shaped, other shapes could be used. For example, the stem could extend from one end of the hand grip and curve such that the bearing surface 44 is centered relative to the hand grip or two stems could extend from the opposite ends of the hand grip and curve to join at a bearing surface.

In addition to the bearing surface 44, the through-hole 46, and the counter-bore 52 of the towing handle 26, the pivot mechanism 28 preferably comprises a connector 54, a journal-pin or pivot pin 56, and a nut 58. Like the towing handle 26, the connector 54 is preferably formed of a polymeric material and preferably has an upper, flat circular bearing surface 60 at one end and a base 62 at its opposite end. The bearing surface 60 of the connector 54 is preferably equal in area to the area of the bearing surface 44 of the towing handle 26. The connector 54 also has a center-bore 64 having a diameter equal to the diameter of the through-hole 46 of the towing handle 26 that extends through the connector 54 perpendicularly from the bearing surface 60. The base 62

of the connector 54 has a cross-section similar to the cross-section of the free end 38 of the smallest tubular section 30 and terminates at an annular rim 66. A pair of parallel flats 68 are formed on opposite sides of the base 62 parallel to the center-bore 64 and a pair of coaxial blind-holes 70 extend perpendicularly into the flats 68.

The journal-pin 56 of the pivot mechanism 28 is preferably formed of steel or aluminum and has an outer cylindrical diameter substantially equal to the diameter of the through-hole 46 of the towing handle 26 and the center bore 64 of the connector 54. The journal-pin 56 preferably has a head 72 at one of its opposite axial ends and a threaded portion 74 at the other of its opposite axial ends. The threaded portion 74 is configured for receiving the nut 58 of the pivot mechanism 28. The journal-pin 56 also preferably has an axial through-hole or center bore 76.

As shown in Figure 6, the towing member 20 of the first embodiment is assembled by passing the journal-pin 56 through the through-hole 46 of the towing handle 26 and the center-bore 64 of the connector 54 with the head 72 of the journal-pin recessed in the counter-bore 52 of the towing handle 26 and the nut 58 threaded on the threaded portion 74 of the pin. Thus, the journal-pin 56 attaches the towing handle 26 to the connector 54 in a manner such that the bearing surface 44 of the towing handle 26 is in a flush, rotational sliding engagement with the bearing surface 60 of the connector 54. The base 62 of the connector 54 is inserted into the free end 38 of the smallest telescoping section 30 until the rim 66 of the connector is engaged with the free end. The connector 54 is preferably secured to the free end 38 of

the telescoping section 30 by a pair of screws or rivets 78 passing through the holes 39 of the free end 38 into the blind-holes 70 of the connector 54. However, other means of connection could be used. The connector secured to the free end 38 of the telescoping section 30 defines the distal end of the arm portion 24.

Configured as describe above, the journal-pin 56 is aligned with the center-axis A-A of the arm portion 24 and the towing handle 26 is free to pivot thereabout. The configuration of the telescoping tubular sections 30, 32, 34 allows the arm portion 24 to be movable between an extended position and a retracted position. In the extended position as shown in Figure 1, the towing handle 26 is positioned away from the backpack 22, thereby allowing a person to tow the backpack without the backpack coming into contact with the person's feet. In the retracted position, the tubular sections 30, 32, 34 of the arm portion 24 are retracted into each other and the towing handle 26 is thereby retracted into a receptacle 80 provided in the top of backpack 22, as shown in Figure 2. The shape of the towing handle 26 allows a person to grip the hand grip 42 in his or her palm with the stem 40 extending between the person's index finger and his or her middle finger when towing the backpack 22. Furthermore, the towing handle 26 can be pivoted such that the hand grip 42 of the towing handle extends up and back, thereby allowing a person to grasp the towing handle without twisting his or her wrist. Furthermore, when stowing or wearing the backpack 22, the towing handle 26 can be pivoted and retracted into the receptacle 80 of the backpack where it lies flush and is unlikely to become snagged or hooked on other items. The recess 48 and blind-holes 50 in the towing handle 26 and

the center bore 76 of the pivot pin 56 allow a release mechanism to be positioned on the towing handle and extending through the pivot pin center bore 76 for releasing a locking mechanism (not shown) that allows the arm portion 24 to be retracted into the backpack 22. The pivotal connection between the towing handle 56 and the arm portion 24 also allows a person to steer the backpack 22 without twisting his or her wrist, thereby reducing fatigue and improving the overall maneuverability of the piece of baggage when being towed.

The second embodiment of the towing member of the invention, like the first embodiment, is specifically adapted and configured to be an integral part of a piece of baggage. As shown in Figures 7-11, the towing member 100 of the second embodiment is preferably comprised of an arm portion 102, a towing handle 104, and an intermediary member 106. Although not shown in the figures, the towing member 100 of the second embodiment, is configured to be attached to a piece of towable baggage in a manner similar to the towing member 20 of the first embodiment. Thus, in describing the second embodiment, details of how the towing member is attached to the piece of baggage are not explicitly provided. However, it should be appreciated that the second embodiment could be attached to the piece of baggage in a manner similar to the first embodiment or by other means known in the art.

As shown in Figures 8-11, the arm portion 102 of the towing member 100 of the second embodiment is preferably a curved telescoping member much like the arm portion 24 of the first embodiment. However, unlike the arm portion 24 of the first embodiment, the arm portion 102 of the second embodiment is preferably a dual-pole member that

slides into and out of a single receptacle (not shown) within the piece of baggage. The arm portion 102 has a length with a proximal end (not shown) that is slidably engaged with the piece of baggage and an opposite distal end 108 that can be retracted toward and extended away from the piece of baggage. A pair of spaced apart tubular members 110 formed of aluminum, steel, or other suitably strong materials connect the proximal end of the arm portion 102 to the distal end 108 of the arm portion.

The tubular members 110 of the arm portion 102 extend side-by-side along the length of the arm portion 102 in close proximity to each other and are preferably rigidly connected to each other at the opposite proximal and distal 108 ends of the arm portion 102. Thus, the two tubular members 110 of the arm portion 102 function much like a conventional single-pole member and the two members are utilized in place of a single tubular member mainly for aesthetic purposes. Finally, a through-hole 112 is preferably formed through each of the tubular members 110 adjacent the distal edge 114 of each of the tubular members.

The arm portion 102 also comprises a pair of distal end caps 116 that are preferably formed of a polymeric material. Each of the end caps 116 has a base portion 118 that is configured and adapted to slide into the distal end of one of the tubular members 110 in a socketing manner. A shoulder 120 is formed on each of the end caps 116 adjacent the base portion 118 and is configured to engage against the distal edge 114 of each of the tubular members 110 to prevent the end cap from sliding further into the tubular member. A first through-hole 122 is formed through the base portion 118 of each end cap 116. Each base portion through-hole 122

aligns with the though-hole 112 of the respective tubular member 110 when the base portion of the end cap is inserted into the tubular member and the shoulder 120 of the end cap is engaged with the distal edge 114 of the tubular member. A fastener 124, such as a rivet, passes through the through-hole 112 of each tubular member 110 and the first through-hole 122 of each end cap base portion 118 and thereby secures the end caps to the tubular members.

Each of the end caps 116 also comprises a planer bearing surface 126 that is oriented perpendicular to the shoulder 120 of the end cap. The bearing surface 126 preferably has a circular periphery. A second through-hole 128 is formed through each end cap 116 and is centered in and perpendicular to the bearing surface. The second through-holes 128 of the bearing caps are coaxial. The second through-hole has a counter-bore 130 that is formed into the side of each end cap 116 opposite the bearing surface 126. The counter-bore 130 thereby forms a recessed annular shelf 132. With each end cap 116 attached to one of the tubular members 110 of the arm portion 102 as described above, the bearing surfaces 126 of the end caps are spaced apart and are oriented parallel to and facing each other.

The towing handle 104 of the second embodiment of the towing member 100 is preferably formed of polymeric material and metal. The towing handle 104 is T-shaped and comprises a grip portion 134 formed of polymeric material and having opposite free ends 136. A stem portion 138 of the towing handle 104 is also formed of polymeric material, preferably integrally with the grip portion 134. The stem portion 138 intersects the grip portion 134 and extends preferably perpendicularly

therefrom. A circular bearing surface 140 is formed at the end of the towing handle stem portion 138. The towing handle 104 also comprises a handle pivot shaft 142 that is preferably formed of metal and is centered in and protrudes perpendicularly from the stem portion bearing surface 140. The pivot shaft 142 projects from the stem portion bearing surface to a threaded portion 144 of the shaft adjacent its distal end. The opposite end 146 of the handle pivot shaft 142 extends into the handle grip portion 134 and is preferably narrowed, knurled, or otherwise textured (not shown) and the grip portion 134 and stem portion 138 of the towing handle 104 are molded around the handle pivot shaft securing the handle pivot shaft to the towing handle grip and stem portions.

The intermediary member 106 of the towing member 100 is preferably formed of a polymeric material as a single monolithic part. A pair of first and second circular bearing surfaces 146,148 are formed at opposite ends of the intermediary member 106 and are parallel to and aligned with each other. A third circular bearing surface 150 is formed on the intermediary member 106 and is oriented perpendicular to the first and second bearing surfaces 146,148. A first through-hole 152 extends through intermediary member 106 perpendicularly from the center of the first bearing surface 146 to the center of the second bearing surface 148. A second through-hole 154 extends through the intermediary member 106, perpendicularly from the center of the third bearing surface 150. The second through-hole 154 has a counter-bore 156 that is formed into the intermediary member 106 from the side opposite to the third bearing surface 150. The counter-bore 156 forms a recessed annular shelf 158.

In addition to the arm portion 102, the towing handle 104, and the intermediary member 106, the towing member 100 of the second embodiment also comprises a shoulder-bolt 160, a shoulder-bolt nut 162, and a handle pivot shaft nut 164 that are utilized to connect the components of the towing member together. The towing handle 104 is assembled to the arm portion 102 of the towing member 100 via the intermediary member 106.

The assembly of the various components of the towing member 100 of the second embodiment is achieved by first inserting the handle pivot shaft 142 of the towing handle 104 into the second through-hole 154 of the intermediary member 106 such that the bearing surface 140 of the towing handle engages against the third bearing surface 150 of the intermediary member. The handle pivot shaft nut 164 is then inserted into the counter-bore 156 of the intermediary member 106 and is threaded onto the threaded portion 144 of the handle pivot shaft 142 until it lightly engages against the recessed annular shelf 158 of the intermediary member. Thus, the handle pivot shaft nut 164 thereby holds the bearing surface 140 of the towing handle 104 against the third bearing surface 150 of the intermediary member 106. The handle pivot shaft nut 164 is preferably a self-locking type of nut and a washer (not shown) is preferably utilized such that, once assembled, the towing handle 104 and the handle pivot shaft nut are free to pivot together about the axis of the second through-hole 154 of the intermediary member 106 relative to the intermediary member, without requiring excessive torque and without the nut loosening. It should also be appreciated that the handle pivot shaft 142 of the towing handle 104 and the handle pivot shaft

nut 164 are dimensioned such that the first through-hole 152 of the intermediary member 106 remains unobstructed.

Once the towing handle 104 has been assembled to the intermediary member 106 as described above, the intermediary member is then assembled to the arm portion 102 of the towing member 100 using the shoulder-bolt 160 and the shoulder-bolt nut 162. This is done by first positioning the first and second bearing surfaces 146, 148 of the intermediary member 106 between the bearing surfaces 126 of the end caps 116 of the arm portion 102 and aligning the first through-hole 152 of the intermediary member with the second through-hole 128 of each of the end caps. Next, the shoulder-bolt 160 is inserted into the counter-bore 130 of one of the end caps 116 such that it extends through the second through-hole 128 of each of the end caps and through the first through-hole 152 of the intermediary member 106. The shoulder-bolt nut 162 is then inserted into the counter-bore 130 of the other end cap 116 where it is then threaded onto the shoulder-bolt 160. Like the handle pivot shaft nut 164, the shoulder-bolt nut 162 is preferably a self-locking type of nut. As the shoulder-bolt nut 162 is tightened onto the shoulder-bolt 160, the head of the shoulder-bolt and the shoulder-bolt nut engage against the recessed annular shelves 132 of the end caps 116 and thereby act to move the end caps toward each other. The intermediary member 106 is dimensioned such that only a slight interference fit exists between first and second bearing surfaces 146,148 of the intermediary member and the bearing surfaces 126 of the end caps 116. It should be appreciated that the shoulder-bolt nut 162 is tightened onto the shoulder-bolt 160 only as much as is necessary to eliminate any gap

between the end caps 116 and the intermediary member 106 and is not tightened to the point that significantly prohibits pivoting movement between the intermediary member and the end caps about the axis of the shoulder-bolt.

Once the towing member 100 of the second embodiment is assembled as described above, the towing handle 104 can be pivoted about two axes relative to the arm portion 102 of the towing member. A first one of the axes is the axis of the shoulder-bolt 160 about which the towing handle 104 and the intermediary member 106 pivot together relative to the end caps 116 of the arm portion 102 of the towing member 100. This first axis remains generally parallel to the rotation axis of the wheels of the piece of baggage to which the towing member 100 is ultimately attached. A second one of the axes is the axis of the handle pivot shaft 142 about which the towing handle 104 and the handle pivot shaft nut 164 are free to rotate relative to the intermediary member 106 of the towing member 100.

The multi-axis pivoting of the towing member 100 of the second embodiment allows the towing handle 104 to be oriented as shown in Figures 10 and 11, relative to the arm portion 102 of the towing member. In Figure 10, the towing handle 104 is shown in an orientation wherein the grip portion 134 of the towing handle 104 is oriented parallel to the first axis. In this orientation, the towing handle 104 can be easily retracted into the piece of baggage in a manner similar to the manner described in reference to the towing member 20 of the first embodiment. As shown in Figure 11, the towing handle 104 has been pivoted about both the first and second axes in a manner such that the second axis extends vertically and

the grip portion 134 of the towing handle extends horizontally in a plane perpendicular to the first axis. In this orientation, the grip portion 134 of the towing handle 104 is ideally positioned for a person to tow the piece of baggage without flexing his or her wrist, regardless of the angle of inclination of the piece of baggage.

The third embodiment of the towing member comprises the towing handle 200 and connector 202 shown in Figures 12-16. Figure 12 shows an exploded assembly view of the towing handle 200 and connector 202 of the third embodiment of the towing member.

In general, the towing handle 200 of the third embodiment of the towing member comprises a lower portion 204, an upper portion 206, two end caps 208, and a unlocking/release button 210 that are preferably formed of polymeric material. Like the first and second embodiments, the towing handle 202 of the third embodiment is preferably T-shaped. The lower portion 204 of the towing handle 200 forms one half of the hand grip 212 of the towing handle and comprises an integrally formed stem 214 that preferably extends perpendicularly from the handgrip portion along the center axis of the towing handle. The stem 214 has a necked portion that forms a cylindrical shaft 216 and terminates with a locking protrusion 218. The locking protrusion 218 essentially has the form of a cylinder having two intersecting channels 220 formed into its terminal face 222. The channels 220 are preferably perpendicular to each other and intersect at the axis of symmetry of the towing handle. For reasons discussed below, each of the channels 220 preferably has opposed walls that diverge from each other slightly as they extend radially from the

center axis. A through-hole 226 is aligned with the center axis of the towing handle 200 and extends through the lower portion 204. Finally, a plurality of grooves 228 are formed into the hand grip 212 part of the lower portion of the towing handle 200 to increase a person's grip of the towing handle and to improve the aesthetics of the towing handle.

The upper portion 206 of the towing handle 200 has a generally semi-cylindrical shell shape that forms the upper half of the hand grip 212 of the towing handle. An opening 230 having an oval periphery extends through center of the upper portion 206.

The end caps 208 of the towing handle 200 are preferably identical to each other and are preferably formed as flat plates having oval perimeters. A pair of countersunk screw holes 232 preferably extend through each of the end caps 208.

The unlocking/release button 210 comprises a oval shaped protrusion 234 with a circumscribing rim 236 formed thereabout. The oval shaped protrusion 234 is dimensioned slightly smaller than the oval opening 230 of the upper portion 206 of the towing handle 200 such that the oval shaped protrusion can pass therethrough. However, the rim 236 of the unlocking/release button 210 is dimensioned larger than the oval opening 230 of the upper portion 206 of the towing handle 200 such that the entire unlocking/release button 210 cannot pass through the opening. The opposite end of the unlocking/release button 210 comprises a rod 238 that cantilevers from the remainder of the button. The rod of the unlocking/release button 210 is preferably cylindrical in shape.

The connector 202 of the third embodiment of the towing member comprises two identical connector halves 240 and a locking member 242 that are preferably formed of polymeric material. Each of the connector halves 240 preferably comprises a cavity 244 that is substantially surround by a peripheral ridge 246. A flat surface 248 is formed in the cavity 244 and a pair of tubular posts 250 extend perpendicularly from the flat surface. Each of the connector halves 240 also comprises semi-cylindrical journal surface 252 that is formed into its peripheral ridge 246. A semi-cylindrical channel 254 recess having a slightly larger radius than the journal surface 252 is formed in the cavity 244 immediately adjacent and aligned with the journal surface. The journal surface 252 is dimensioned to correspond to the length and diameter of the cylindrical shaft 216 of the stem 214 of the towing handle 200. A smaller semi-cylindrical opening is aligned with the journal surface 252 and is formed into the opposite side of the peripheral ridge 246 of each of the connector halves 240. Finally, a plurality of alignment pins 258 and alignment holes 260 are form into the peripheral ridge 246.

The locking member 242 of the connector 202 is generally rectangular in shape and has a pair of opposite parallel surfaces 262. A pair of oval slots 264 extend through the locking member 242 from one of the opposite parallel surfaces 262 to the other. The locking member 242 also has opposite top 266 and bottom 268 end portions and has a cylindrical blind-hole 270 in the bottom end portion that extends toward the top end portion.

Having described the various components of the towing handle 200 and the connector 202 of the third embodiment of the towing member, the assembly of the

components will now be discussed. The towing handle 200 of the third embodiment of the towing member is assembled by first slidably inserting the rod 238 of the unlocking/release button 210 into the through-hole 226 of the lower portion 204 of the towing handle from thereabove. Once this is done, the upper portion 206 of the towing handle 200 is brought into engagement with the lower portion 204 of the towing handle. As this is done, the oval shaped protrusion 234 of the unlocking/release button 210 is positioned extending through the opening 230 of the upper portion 206. Once the upper 206 and lower 204 portions of the towing handle 200 are engaged with each other, the unlocking/release button 210 becomes captured therebetween due to the fact that the rim 236 of the unlocking/release button is larger than the opening 230 of the upper portion of the towing handle. With the upper 206 and lower 204 portions of the towing handle 200 engaging each other, the end caps 208 are then attached to the opposite ends of the hand grip 212 of the towing handle using screw fasteners (not shown) that are inserted through the screw holes 232 of the end caps. With the end caps 208 attached as described above, the upper 206 and lower 204 portions of the towing handle 200 are secured together and cannot be separated without removing the ends caps.

The connector 202 is assembled to the lower portion 204 of the towing handle 200. This is done by first positioning the shaft 216 of the stem 214 of the lower portion 204 of the towing handle 200 against the journal surface 252 of one of the connector halves 240. The locking member 242 of the connector 202 is then positioned with one of its opposite parallel surfaces 262 engaging the flat surface 248 of the connector halve 240

and with the blind-hole 270 of the locking member facing away from the towing handle 200. In this position, the posts 250 of the connector halve 240 extend partially into the oval slots 264 of the locking member 242. Finally, the other of the connector halves 240 is then attached to the assembly by aligning the alignment pins 258 of each of the connector halves with the alignment holes 260 of the other of the connectors halves and moving the halves toward each other until the peripheral ridge 246 of each of the halves engages with the other.

The connector halves 240 are dimensioned and shaped such that when they are engaged with each other as described above, the posts 250 of each connector halve engages with the posts of the other halve within the oval slots 264 of the locking member 242. This prevents the flat surfaces 248 of the connector halves 240 from clamping the locking member 242 therebetween. Thus, the locking member 242, although trapped with the internal volume of the connector 202 that is created by the cavities 244 of the connector halves 240, remains free to translate toward and away from the stem 214 of the towing handle 200. The towing handle 200 itself, except when locked as discussed below, remains free to pivot about its center axis relative to the connector 202 but can not be removed therefrom due to the fact that the locking protrusion 218 is trap between the semi-cylindrical channels 254 of the connector halves 240.

As assembled above, the towing handle 200 and connector 202 of the third embodiment are then attached to the distal end of the arm portion (not shown) of the towing member that is preferably of the type described in reference to the first embodiment of the towing member. Similar to the first embodiment of the towing member, the

connector 202 of the third embodiment is preferably dimensioned to slide tightly into the tubular end of the arm portion. While this is done, a release member 272 is inserted through the opening at the base of the connector 202 created by the semi-cylindrical openings 256 of the connector halves 240 and into the blind-hole 270 of the locking member 242. The release member 272 is configured and adapted to actuate a locking mechanism (not shown) when it is pressed so as to allow the arm portion of the towing member to be retracted into the baggage to which it is attached. Such release members and locking mechanisms are well known in the field of the art and the particular configuration and details thereof are not relevant to the present invention except as otherwise indicated. However, it should be appreciate that towing handle 200 and connector 202 of the third embodiment is specifically configured to work in conjunction with a release member of the type that is spring biased toward the towing handle. Once the connector 202 has been assembled to the arm portion of the towing member as discussed above, a pair of fasteners (not shown) are inserted through the distal end of the arm portion and through the tubular posts 250 of the connector halves 140 to secure the connector to the arm portion of the towing member, thereby completing the assembly process.

Once fully assembled, the towing handle 200 can be selectively locked in two orientations relative to the connector 202 and arm portion of the towing member of the third embodiment. To described how this is achieved, towing handle 200 and connector 202 assembly is shown with one of the connector halves 240 removed in Figures 13-16. As shown in its first orientation in Figure 13, the towing handle 200 is positioned such that its hand

grip 212 is oriented generally parallel to the flat surfaces 248 of the connector halves 240. In this position, the biasing force of the release member 272 causes the locking member 242 of the connector 202 to move toward the towing handle 200 until the top end portion 266 of the locking member moves into one of the channels 220 formed in the locking protrusion 218 of the towing handle. As a result of the locking member 242 being positioned between the opposed walls 224 of the respective channel 220, the towing handle 200 is prevented from freely rotating about its center axis relative to the connector 202 by the engagement of the opposed walls of the channel with the locking member. However, the opposed walls 224 of each of the channels 220 are specifically dimensioned to be slightly further apart than are the opposite parallel surfaces 262 of the locking member 242 such that the towing handle 200 can pivot slightly through approximately a twenty degree arc relative to the connector 202 when locked in its first orientation.

When desired, the towing handle 200 can by selective locked in its second orientation relative to the connector 202 and towing member. This is done by pressing the oval shaped protrusion 234 of the unlocking/release button 210 on the towing handle 200 and rotating the handle to its second orientation shown in Figure 16. When the unlocking/release button 210 is pressed as shown Figure 14, the rod 238 of the unlocking/release button 210 extends into the channels 220 of the locking protrusion 218 of the stem 214 of the towing handle 200 and engages the locking member 242 of the connector 202. This action overcomes the biasing force that the release member 272 exerts on the locking

member 242 and forces the locking member away from the towing handle 200, thereby disengaging the top end portion 266 of the locking member from the respective channel 220 of the locking protrusion 218 of the towing handle as shown in Figure 14. The towing handle 200 can then be freely rotated relative to the connector 202, so long as the unlocking/release button 210 remains pressed.

If desired, the towing handle 200 can then be locked in its second orientation relative to the connector 202 and arm portion of the towing member. This is done by simply releasing the unlocking/release button 210 of the towing handle 200 after the towing handle has been rotated to its second orientation. When the unlocking/release button 210 has been released, the biasing force of the release member 272 once again forces the locking member 242 toward the towing handle 200 until the top end portion 266 of the locking member moves into the other of the channels 220 formed in the locking protrusion 218 of the towing handle. Thus, as shown in Figure 16, the towing handle 200 is once again prevented from freely rotating about its center axis relative to the connector 202 by the engagement of the opposed walls 224 of the channel 220 with the locking member 242. As discussed above, it should be appreciated that, due to the opposed walls 224 of each of the channels 220 being dimensioned to be slightly further apart than are the opposite parallel surfaces 262 of the locking member 242, the towing handle 200 remains able to pivot through approximately a twenty degree arc relative to the connector 202 when locked in its second orientation.

The unlocking/release button 210 can be pressed at any time to allow the orientation of the towing member 200 to be adjusted as desired relative to the remainder

of the towing member. Additionally, it is important to understand that as the unlocking/release button 210 is pressed, the movement of the locking member 242 within the connector 202 causes the release member 272 to resiliently move away from the towing handle 200. Thus, by pressing the unlocking/release button 210, the release member 272 actuates the locking mechanism so as to allow the arm portion of the towing member to be retracted into the baggage.

As describe above, the towing handle 200 of the third embodiment of the towing member can be pivoted in a manner similar to that of the first embodiment relative to the remainder of the towing member. However, the towing handle 200 can also be locked in any one of a plurality of orientations relative to the remainder of the towing member. This locking feature allows a person towing a piece of baggage to exert a torque relative to the axis of the towing member when desired and thereby prevents inadvertent rollover of the piece of baggage when the piece of baggage is towed over uneven ground, such as a curb.

While the invention has been described in reference to specific embodiments, it should be understood that modifications and variations could be made without departing from the scope of the invention. For example, it should be understood that the use of the towing member of the invention is not limited to backpacks and the towing member could be used on various other types of baggage. Additionally, the arm portion of the towing member need not necessarily be curved. Furthermore, the towing handle could be pivotally attached to the arm portion of the towing member using a ball-and-socket type connection and could therefore be pivoted about at least

three axes. Hence it should be clear that numerous variations of the invention could be made without departing from the scope of the invention defined by the following claims.